THE VARIETY OF OPTIMAL POLITICAL – ECONOMIC SYSTEMS:

Organization, Information, and Efficient Politico-Economic Systems

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National political - economic systems differ according to place and time

- Across nations: USA, Russia, Switzerland, Japan, Singapore…

- Within a same nation at different points in time:
  - from Russia to USSR (1917) and from USSR to Russia (1991)
  - from Yugoslavia to smaller countries
  - from Mao's China to the China of Deng

Why?
Are some of them more efficient in the use of available resources than others?

Are these variations arbitrary (random)?

No ⇨ There are **common trends** and **common reversals** :

- First industrial revolution (1760 -1860): science, technology, free trade and political liberalization.
- Second industrial revolution (1875 -1975): huge output growth, giant firms/ big states, de-globalization, retreat of democracy.
- The Information revolution (1975 - today): vanishing conglomerates, fragmentation of nation-states, privatization, market globalization, and rise in the number of democracies in the world.

Could a **common underlying factor** explain the **common trends and common reversals** affecting **political - economic systems**?

Systems are defined by their mix of productive organizations, that imply different allocations of decision-making.

A system (economic and/or political), in its textbook definition, is an answer to the following questions regarding **production**:

- **who decides** (to produce *what*, for *whom*, and *how*)

System is a mix of different organizations	**implies**	**Different allocation of decision making**
• **Markets**	⇒	• **many decide**
• **Firms (hierarchies)**	⇒	• **few decide** (one per firm)
• **States (hierarchies)**	⇒	• **one decides** (one per nation-state)

The number of those who decide **(many – few -- or one)** depends on the relative importance of markets, firms and state in the country considered.

The link between organizations' prevalence and decision making allocation is due to a fundamental difference in interpersonal relationships between 2 partners in exchange:

In <u>Markets</u>: ***<u>both</u>*** **decide**

In <u>Hierarchies</u>: ***<u>one</u>*** **decides, the other one carries out the decider's directives.**

Example: the manager decides and the employees execute in a firm.

Conclusion: Hierarchical exchanges *<u>concentrate</u>* the allocation of decision-making in a society

Because systems differ by their use of Markets and Hierarchies (Herbert Simon, O.E. Williamson), they also differ by their allocation of decision making

- A centralized production mode is based on a small number of decision makers, **each one making decisions for all other members of their team** (or hierarchy).
- These non decision makers are subordinate employees.
- A mostly decentralized, market production mode, is based on a large number of independent decision makers, small hierarchies, and many markets.
- **The ratio of decision makers to non decision makers measures the degree of concentration of decision**.

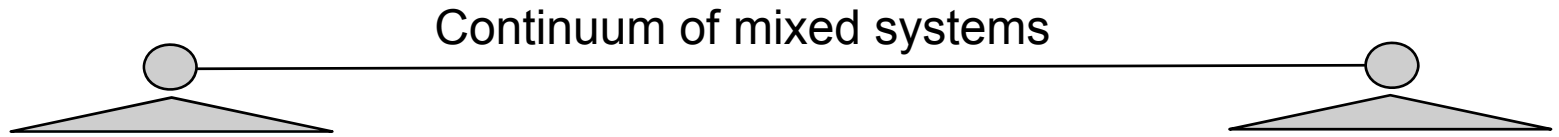
Historical example of decentralized vs. centralized production of a same product: Gun manufacturing by various specialized and independent craftsmen coordinated through market exchanges in Birmingham (England) 1860, versus the integrated firms (Colt and Remington) employing subordinate, specialized, wage earners in the US.

Therefore all systems can be described by a single variable:
The degree of concentration of decision making

The **Decision Concentration Ratio (DCR):**

$$\mathbf{DCR} = \frac{\textbf{Total number of decision makers}}{\textbf{Total number of people in the society (population)}}$$

There is **a continuum of possible Decision Concentration Ratios** (DCR) , describing a continuum of organizational systems



DCR about 0%

DCR about 100%

E.g. a single dictator decides for everything that millions of people are doing

Each person decides for himself (or herself)

A system is more centralized (decision making is more concentrated) when its hierarchies are larger.

- For a given amount of national resources the larger the hierarchies, the fewer there are.
- Larger and fewer hierarchies increase the overall concentration of decision making.
- Since we want to know what determines a system, and since systems are defined by their concentration ratio, we want to know what determines the size of hierarchies.
- The answer to that question is to be found in the theory of the firm (1.)
- We thus proceed from the optimal size of the firm (microeconomics) to the aggregate concentration ratio (at the system level, or macro level) (2.)

1. What determines firm size?

•Standard microeconomics: increasing marginal cost of capital and labor and down-sloping market demand.

•Manne, Rosen, Lucas: Firm size explained by the talent of the manager, but they do not explain ”waves” nor “common reversals” of average firm size (since the distribution of talent should be approximately stable).

•Rosa (2000): The firm (hierarchy) is a device for duplicating information and **sharing it within** the hierarchy, thus lowering average product cost. When information is costly it is best to spread its cost over a large volume of production, i.e. a large firm.

•The limits to the information cost advantage of the large size is due to increasing loss of control in larger hierarchies (Tullock, Williamson, Alchian-Demsetz).

•Managers maximize profits by choosing the size of their firm that minimizes the total average cost of production, including the cost of information.

The cost of information and factor proportions determine the firm's size.

- The Manager decides for all members of the team and is thus the one who needs information. Information is a factor of production.

- A simplified neoclassical Production Function can thus be written:
  Y = f (**Info**, K, L)
  Y: Output; Info: Information needed by the manager; K: Capital; L: Labor

- All managers **require approximately a same amount of information** (regarding e.g. Finance, Marketing, HR, Sourcing), **whether they manage a small or a large firm.**

- But large firms can spread the cost of that amount of "information input" over larger quantities of output Y (and thus larger K and larger L) than a small firm can do.

Consequences:

Info/Y (as well as Info/K and Info/L) is higher in small than in large firms.

A small firm is relative *more information-intensive* than a large firm.

A large firm economizes on information and *is less information-intensive*.

This analysis is also valid for a State

A State is a firm because:

•It is organized as a hierarchy producing various goods.

•It tries to maximize its discretionary resources over costs in order to reward its managers as well a political supporters through the production of whatever private goods that allow a redistribution of resources among political clienteles (Rosa 1993, Privatization and Nationalization Theory, Kyklos).

•In these politically productive activities the State encounters the same informational problems as other commercial firms: procurement, HR, Finance and taxation, marketing, etc. that require costly information.

•It is submitted to the competitive pressure of other potential rulers (internal and external) that compel it to minimize costs, and among them the costs of information, by searching for an optimal size (Info/output).

Consequence: Both firms and states grow in size when the cost of information increases, and shrink when it falls.

2. At the aggregate level: Cheaper information shrinks hierarchies and expands markets
("Coase-Rybczynski" theorem, Rosa 2000, 2006)

- To Simplify the analysis regroup firms (hierarchies) into two broad categories:
  - Small hierarchies (more information intensive)
  - Large hierarchies (less information intensive)

- **Rybczynski Trade Theorem:** An increase in a country's endowment of a factor will cause an increase in output of the sector which uses that factor intensively, and a decrease in the output of the other sector.
- **Coase – Rybcynski Theorem:** When information as an input and factor of production becomes cheaper, the sector with small hierarchies will develop (more small firms), while the sector with large hierarchies will contract (fewer firms/ firms become smaller).

Why?
- Large hierarchies firms profit less from a falling price of information than smaller ones
- Small firms will benefit more from the lower cost of the factor they use intensively
- The comparative advantage of small firms over large firms increases.

Conclusion: Information availability relative to other factors determines the degree of centralization (neoclassical analysis extended).

Can mixed systems be efficient?

•Existing welfare economic theory proved that only one system, that of complete decentralization - with zero information cost - is efficient (Arrow Debreu).

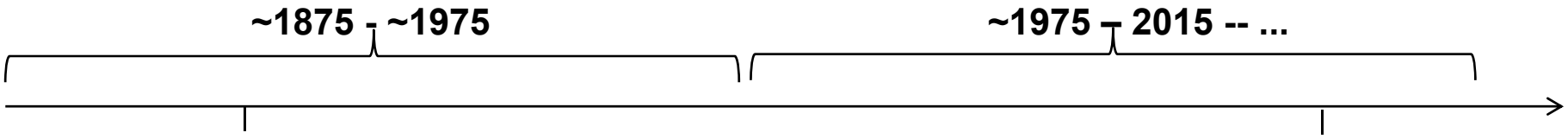
•What then about mixed economies which are more or less centralized because information costs are positive?

•Demsetz recently argued (Review of Law and Economics 2011) that bringing into the analysis a cost that was previously ignored did not make that economy less efficient as far as that cost has been internalized in the economic choices of individual agents.

•For instance, an economy in which transport costs enter the optimization calculus and thus contribute to determine an optimized structure of production can be efficient as well as an economy with zero transportation costs but with a different structure of production.

It follows that when relative input costs (including the cost of information) vary, the optimal allocation of decision should vary, and thus efficient organizational systems should also vary.

Historical evidence provides support for analysis



- Second Industrial Revolution brings about a phenomenal increase of production Y.
- Info/Y falls because Y grows more than Info.
- Development of hierarchies as the most efficient organizational model.
- Centralization of production.
- Firms and States grow while markets´ relative share shrinks (more trade inside then between market players).

First organizational, "managerial" revolution

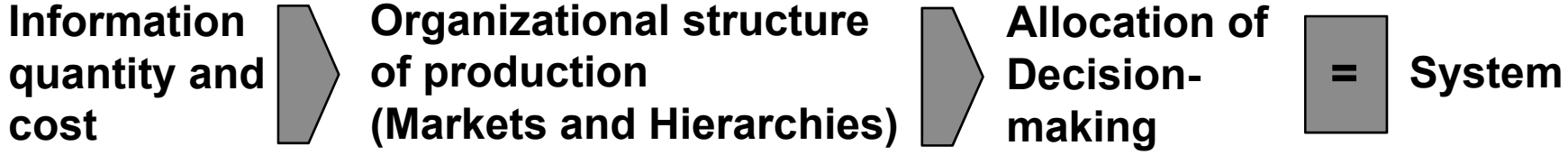
- Information revolution starting in the mid 1970s and mid 1980s determines a 99.9% fall in the cost of information.
- Info /Y rises at a remarkable pace.
- Development of markets as the most efficient recourse.
- Decentralization of commercial and political organizations.
- Firms and States shrink while markets expand.

Second organizational, "informational" revolution

Summary

1. **Systems differ by many aspect. But are *fundamentally defined* by the allocation of decision-making.**

1. **Any such allocation is the *result* of a technological-economical-organizational *choice*:**



3. **Ultimate driver: Factor proportions and endowment**

References

Rosa, J-J (2006), *The Second XXth Century, The Decline of Hierarchies and the Future of Nations*, Hoover Press, first published in French, Grasset, 2000.

Rosa, J-J (1993), “Nationalization, Privatization, and the Allocation of Financial Property Rights”, *Kyklos*.

Rosa, J-J with Julien Hanoteau (2012), “The Shrinking Hand: Why Information Technology Leads to Smaller Firms”, *The international Journal of the Economics of Business*, July.

Rosa J-J with Xavier De Vanssay (2012),”Information, organization, and freedom: Explaining the great reversal”, *The Review of Austrian Economics*, December.